

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY


(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 27 OCT 2005

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Applicant's or agent's file reference 27013/39425	FOR FURTHER ACTION		See Form PCT/PEA416
International application No. PCT/US2004/022075	International filing date (day/month/year) 08.07.2004	Priority date (day/month/year) 11.07.2003	
International Patent Classification (IPC) or national classification and IPC C07C67/04, C07C69/145			
Applicant LOYOLA UNIVERSITY OF CHICAGO			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (Indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 22.06.2005		Date of completion of this report 28.10.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer Kardinal, S Telephone No. +31 70 340-3483	



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/US2004/022075

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-21 as originally filed

Claims, Numbers

1-44 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	4,5,8,12,14-20,23,24,29-31,33,34-36,39,41-44
	No: Claims	1-3,6,7,9-11,13,21,22,25-28,32,37,38,40
Inventive step (IS)	Yes: Claims	
	No: Claims	1-44
Industrial applicability (IA)	Yes: Claims	1-44
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V.

1. Reference is made to the following documents :

- D1: S. WATANABE ET AL.: ISRAEL JOURNAL OF CHEMISTRY., vol. 9, 1971,
pages 273-280, XP008045645
D2: WO 00/26175 A (BP CHEMICALS LIMITED) 11 May 2000
D3: DE 31 05 399 A (EC ERDÖLCHEMIE) 21 October 1982
D4: US-B1-6 278 016 (BABLER JAMES H) 21 August 2001

2. Novelty

2.1 The present wording of independent claims 1, 21 and 37 is not limiting as to the presence of further reagents (e. g. catalysts) or process steps : a method "comprising" certain process steps does not exclude the presence of further process steps (e. g. the addition of a catalyst), and a solution "containing" certain alkanoic acids does not exclude the presence of further reagents, e. g. catalysts. The scope of the present claims encompasses, therefore, both catalysed and uncatalysed processes.

2.2 Document D1 discloses (cf. the international search report) a palladium catalysed reaction of myrcene with an excess of acetic acid leading i. a. to geranyl acetate and neryl acetate. The reaction is performed at reflux temperature in the presence of sodium acetate.

The subject-matter of claims 1-3, 6, 7, 9, 13, 21, 22, 25-28 and 32 is therefore not novel (Article 33(2) PCT).

2.3 Document D2 discloses (cf. the international search report) a preparation of crotyl acetate and sec-butenyl acetate by addition of acetic acid (used in excess) to butadiene in a pressurised vessel at 135 to 145 °C, catalysed by ytterbium triflate in the presence of decane.

The subject-matter of claims 1, 3, 10 and 11 is therefore not novel (Article 33(2)

PCT).

2.4 Document D3 discloses (cf. the international search report) the addition of carboxylic acids to conjugated diens. Example 5 shows the addition of an excess of acetic acid to butadiene in a pressurised vessel at 100 °C.

The subject-matter of claims 1, requiring a temperature "in excess of 100 °C", cannot be clearly distinguished from the process according to D3 due to the usual error margin while measuring and maintaining a desired temperature.

The subject-matter of claims 1, 3, 10 and 11 can therefore not be regarded as novel over D3 (Article 33(2) PCT).

2.5 Document D4 discloses (cf. the international search report) the preparation of prenyl alkanoates by addition of alkanoic acids (used in molar excess) to isoprene. Example I shows a phosphoric acid catalysed reaction in a pressurised vessel with gradual addition of isoprene to the reaction mixture.

The subject-matter of claims 37, 38 and 40 is therefore not novel (Article 33(2) PCT).

3. Inventive Step

The continuous addition of polymerisation-prone dienes (cf. D3, page 19, last paragraph and D4, column 8, lines 35-39), the use of co-solvents (cf. D1, table II and D2, page 24, line 11), the presence of alkali metal alkanoates (cf. D1, page 279), the application of pressure as well as the use of mixtures of alkanoic acids (cf. D4, column 5, lines 42-43) are known from the prior art.

The dependent claim do not seem to contain, therefore, any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of the inventive step.

Re Item VIII.

Independent claim 1, in which the educt is very broadly defined as compound "comprising

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(SEPARATE SHEET)**

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a conjugated diene" and the product is only vaguely defined as "ester derivative", is not supported by the description as required by Article 6 PCT, as its scope is broader than justified.